

PNS

Primary Series Planetary Gearboxes

Features a round mounting flange and a caged standard class planetary gear design.

Compact in-line housing available in sizes up to 160 mm.

Performance Benefits:

- High torque capacity.
- Designed for quiet performance.
- Exceptional accuracy with backlash levels as low as <5 arc-min.

Versatility:

- Maximum ratio of 1000:1.

Right-angle model (PNSR) available in frame sizes up to 120 mm.



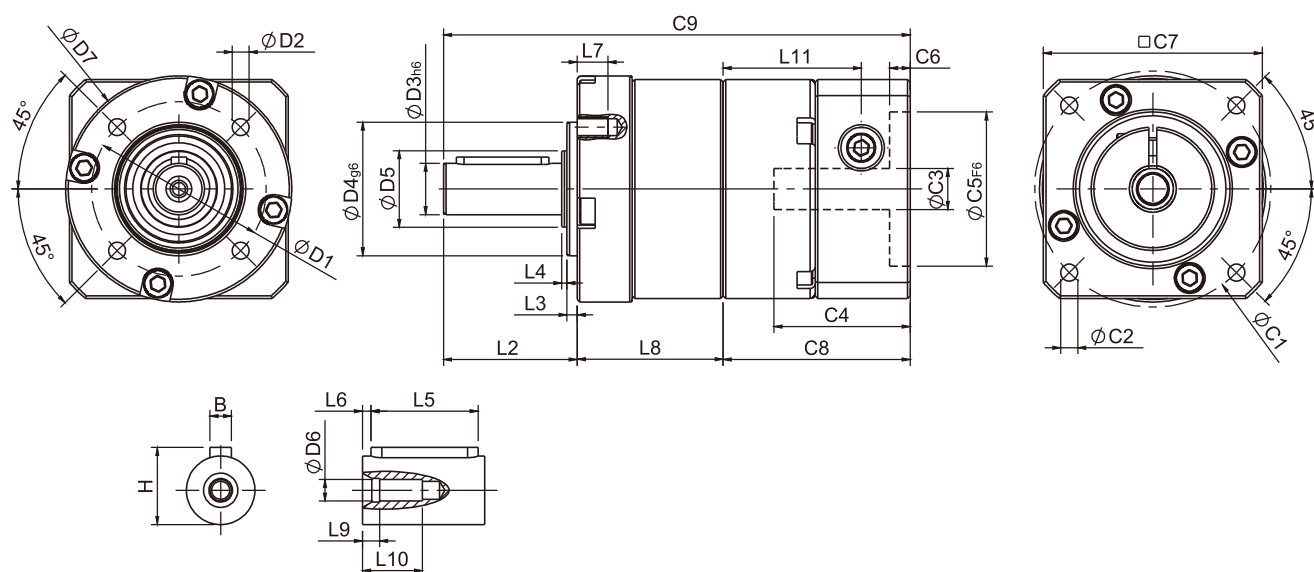
PNS

Frame Size (mm)	40, 60, 80, 120, 160
Ratio	3:1 - 1000:1
Nominal Input Speed (rpm)	2,500 - 4,000
Max Input Speed (rpm)	4,000 - 6,000
Backlash (arc-min)	1 Stage: 5 - 9 2 Stages: 7 - 12 3 Stages: 10 - 15
Noise Level (dBA / 1m)	60 - 68

Features

- ▶ In-line Configuration.
- ▶ Output shaft, 10 mm through 40 mm diameter.
- ▶ Torque Capacity Range: 8 Nm through 490 Nm.
- ▶ Caged Planet Carrier: with standard planet gear set.
- ▶ High performance, efficiencies and low acoustics.
- ▶ Wide Range of Ratios: 6 single stage ratios, 10 two-stage ratios and up to 9 three-stage ratios.
- ▶ Output Bearings deliver radial load capacity as high as 6720 N, and axial capacities up to 4200 N.
- ▶ Square Servo and Step Motor input: accommodates 40 mm through 140 mm, with optional sizes available.

PNS Single Stage Dimensions



Specifications

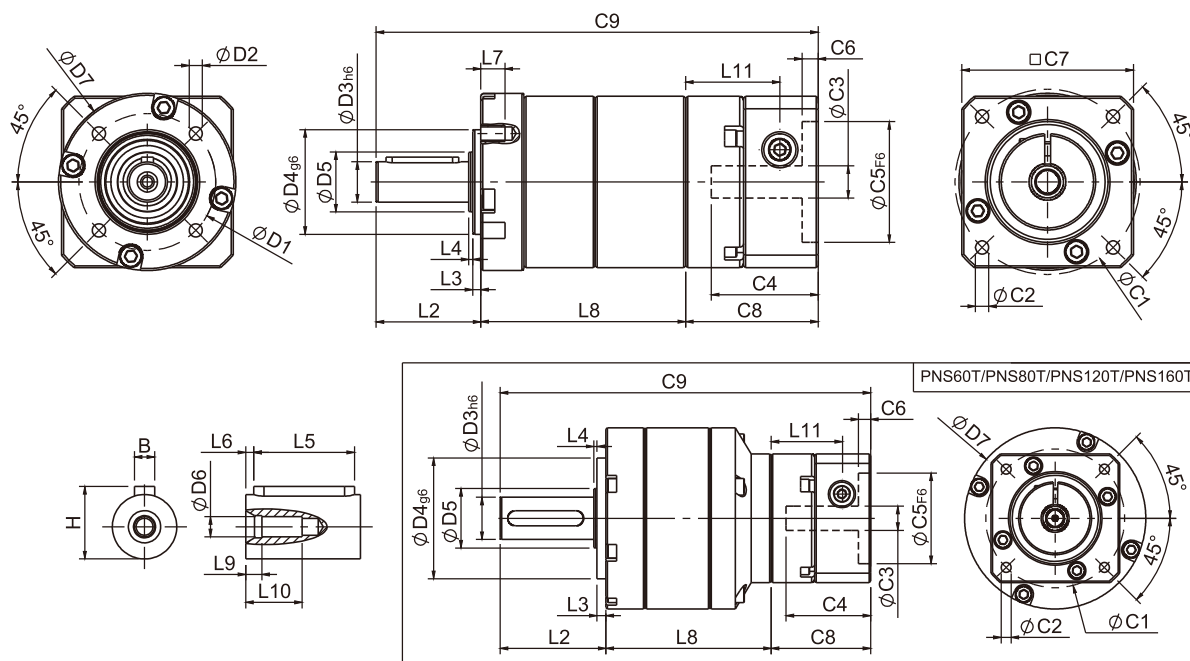
Unit:mm

Dimensions	PNS40	PNS60	PNS80	PNS120	PNS160
D1	34	52	70	100	145
D2	M4x0.7P	M5x0.8P	M6x1.0P	M10x1.5P	M12x1.75P
D3 _{h6}	10	14	20	25	40
D4 _{g6}	26	40	60	80	130
D5	15	20	35	40	50
D6	M3x0.5P	M5x0.8P	M6x1.0P	M10x1.5P	M16x2.0P
D7	44	60	90	116	160
L2	26	35	40	55	87
L3	2	3	3	4	5
L4	1	1	1	1	2
L5	18	25	28	40	65
L6	2.5	2.5	4	5	8
L7	6	8	10	15	20
L8	28.4	34.4	42.2	68.8	81
L9	3	4	4.5	6	6
L10	9	16.5	16.5	26	38
L11	26.9	31.6	37.3	51.8	63
C1 ²	46	70	90	145	130
C2 ²	M4x0.7P	M5x0.8P	M6x1.0P	M8x1.25P	M8x1.25P
C3 ²	≤8/≤11	≤14/≤19	≤19/≤24/≤28	≤24/≤32/≤38	≤35/≤38
C4 ²	26.5	33.5	41	51.5	66.5
C5 ^{2F6}	30	50	70	110	110
C6 ²	4	4	6	6	5.5
C7 ²	42.6	60	90	130	140
C8 ²	36.4	42.1	51.5	68	80
C9 ²	90.8	111.5	133.7	191.8	248
B	3	5	6	8	12
H	11.2	16	22.5	28	43

★ C1~C9 are motor specific dimensions (metric std shown). Size may vary according to motor flange.

★ Specification subject to change without notice.

PNS Double Stage Dimensions



Specifications

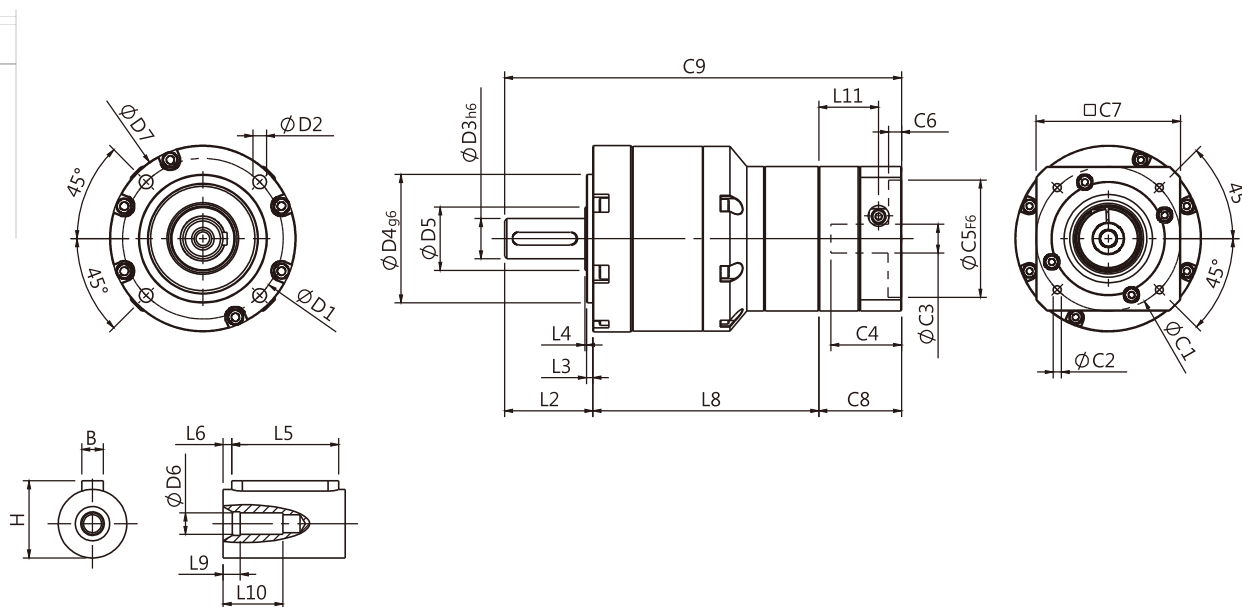
Unit:mm

Dimensions	PNS40	PNS60	PNS60T	PNS80	PNS80T	PNS120T	PNS160	PNS160T
D1	34	52		70		100	145	
D2	M4x0.7P	M5x0.8P		M6x1.0P		M10x1.5P	M12x1.75P	
D3 _{H6}	10	14		20		25	40	
D4 _{g6}	26	40		60		80	130	
D5	15	20		35		40	50	
D6	M3x0.5P	M5x0.8P		M6x1.0P		M10x1.5P	M16x2.0P	
D7	44	60		90		116	160	
L2	26	35		40		55	87	
L3	2	3		3		4	5	
L4	1	1		1		1	2	
L5	18	25		28		40	65	
L6	2.5	2.5		4		5	8	
L7	6	8		10		15	20	
L8	50.85	61.4	54.7	76	71.5	106.9	142	129
L9	3	4		4.5		6	6	
L10	9	16.5		16.5		26	38	
L11	23.4	31	23.4	37.3	31	37.3	63	42
C1 ²	46	70	46	90	70	90	130	115
C2 ²	M4x0.7P	M5x0.8P	M4x0.7P	M6x1.0P	M5x0.8P	M6x1.0P	M8x1.25P	M8x1.25P
C3 ²	$\leq 8/\leq 11$	$\leq 14/\leq 19$	$\leq 8/\leq 11$	$\leq 19/\leq 24/\leq 28$	$\leq 14/\leq 19$	$\leq 19/\leq 24/\leq 28$	$\leq 35/\leq 38$	$\leq 24/\leq 28$
C4 ²	26.5	33.5	26.5	41	33.5	41	66.5	53.5
C5 ^{2F6}	30	50	30	70	50	70	110	95
C6 ²	4	4	4	6	4	6	5.5	5.5
C7 ²	42.6	60	42.6	90	60	90	140	120
C8 ²	32.9	41.5	32.9	51.5	41.5	51.5	80	58
C9 ²	109.75	137.9	122.6	167.5	153	213.4	309	274
B	3	5		6		8	12	
H	11.2	16		22.5		28	43	

★ C1~C9 are motor specific dimensions (metric std shown). Size may vary according to motor flange.

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PNS Triple Stage Dimensions-2



Specifications

Unit:mm

Dimensions	PNS120T	PNS160T
D1	100	145
D2	M10x1.5P	M12x1.75P
D3 _{h6}	25	40
D4 _{g6}	80	130
D5	40	50
D6	M10x1.5P	M16x2.0P
D7	116	160
L2	55	87
L3	4	5
L4	1	2
L5	40	65
L6	5	8
L7	15	20
L8	140.7	177
L9	6	6
L10	26	38
L11	37.3	42
C1 ²	90	115
C2 ²	M6x1.0P	M8x1.25P
C3 ²	≤19/≤24/≤28	24/≤28
C4 ²	41	53.5
C5 ^{2F6}	70	95
C6 ²	6	5.5
C7 ²	90	120
C8 ²	51.5	58
C9 ²	247.2	322
B	8	12
H	28	43

★ C1~C9 are motor specific dimensions (metric std shown). Size may vary according to motor flange.

★ Specification subject to change without notice.

PNS Specifications

Specifications		Stage	Ratio	PNS40	PNS60	PNS-80	PNS-120	PNS-160		
Nominal Output Torque T_{2N}	N•m	1	3	9	28	85	200	420		
			4	10	32	80	215	490		
			5	11	35	95	215	473		
			7	10	28	85	200	400		
			9	8	23	75	195	320		
			10	8	21	65	180	320		
		Stage	Ratio	PNS40	PNS60/ PNS60T	PNS80/ PNS80T	PNS-120T	PNS160/ PNS160T		
		2	15	11	35/24	95/68	168	420		
			20	11	35/31	95/95	215	490		
			25	11	35/30	95/95	215	473		
			35	11	35/28	95/95	215	473		
			45	11	35/27	95/92	215	473		
			50	(Ratio 49) : 10	35/27	95/82	205	473		
			70	(Ratio 63) : 10	28/28	85/85	200	400		
			90	(Ratio 81) : 8	23/23	75/75	195	320		
		100	8	21/21	65/65	180	320			
		Stage	Ratio	PNS40	PNS60T	PNS80T	PNS120T	PNS160T		
		3	125	11	35	95	215	473		
			175	11	35	95	215	473		
			225	11	35	95	215	473		
			245	11	35	95	215	(Ratio 250) : 473		
			315	11	35	95	215	(Ratio 350) : 473		
			405	11	35	95	215	(Ratio 400) : 473		
			567	10	28	85	200	(Ratio 500) : 473		
			729	8	23	75	195	(Ratio 700) : 400		
		1000	8	21	65	180	320			
Emergency Stop Torque T_{2NOT}	N•m	(2.5 times of Nominal Output Torque) (*Max. Output Torque T_{2B} = 60% of Emergency Stop Torque)								
Nominal Input Speed n_{1N}	rpm	1,2,3	3-1000	4000	4000	3000	2500	2500		
Max. Input Speed n_{1max}	rpm	1,2,3	3-1000	6000	6000	6000	5000	4000		
Standard Backlash P2	arcmin	1	3-10	≤ 9	≤ 8	≤ 7	≤ 6	≤ 5		
		2	15-100	≤12	≤10	≤ 9	≤ 8	≤ 7		
		3	125~1000	≤15	≤12	≤12	≤12	≤10		
Torsional Rigidity	N•m /arcmin	1,2,3	3-1000	1.2	3.5	8.5	17	30		
Max. Radial Load F_{2rB}^{-1}	N	1,2,3	3-1000	580	890	2050	4370	6720		
Max. Axial Load F_{2aB}^{-1}	N	1,2,3	3-1000	410	430	1100	2630	4200		
Operating Temp.	°C	1,2,3	3-1000	-10°C ~ +90°C						
Service Life	hr	1,2,3	3-1000	20,000 (10,000 Continuous Operation)						
Efficiency	%	1	3-10	≥ 95%						
		2	15-100	≥ 90%						
		3	125~1000	≥ 85%						
Weight	kg	1	3-10	0.5	1.1	2.8	6.3	6.6		
		2	15-100	0.7	1.5/1.3	4.2/3.1	7.9	20.7/11.2		
		3	125~1000	0.8	1.7	4.5	9.3	22.4		
Mounting Position	-	1,2,3	3-1000	Any Direction						
Noise Level ²	dBA/1m	1,2,3	3-1000	60	63	66	67	68		
Protection Class	-	1,2,3	3-1000	IP65						
Lubrication	-	1,2,3	3-1000	Synthetic Lubricant						
Inertia (J1)										
Stage	Ratio	unit		PNS40(φ8)	PNS60(φ14)	PNS80(φ19)	PNS120(φ24)	PNS160(φ35)		
1	3	kg•cm ²		0.04	0.23	0.77	2.30	7.89		
	4			0.03	0.21	0.67	1.92	5.83		
	5~10			0.03	0.21	0.61	1.71	5.38		
Stage	Ratio			PNS40(φ8)	PNS60(φ14) PNS60T(φ8)	PNS80(φ19) PNS80T(φ14)	PNS120T(φ19)	PNS160(φ35) PNS160T(φ24)		
2	15			0.04	0.23/(0.04)	0.77/(0.23)	0.77	5.38/(1.61)		
	Other Ratios			0.03	0.21/(0.03)	0.61/(0.21)	0.61	5.38/(1.61)		
Stage	Ratio			PNS40(φ8)	PNS60T(φ8)	PNS-80T(φ14)	PNS120T(φ19)	PNS160T(φ24)		
3	All Ratios			0.03	0.03	0.21	0.61	1.61		
* 1. Applied to the output shaft center at 100 rpm.										
* 2. Environment noise level 30 dB; distance 1m; measured under free loading with input speed 3000 rpm; ratio = 10 (1-stage) or ratio = 100 (2-stage).										
※The above figures/specifications are subject to change without prior notice.										

Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.